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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/733,361 | 12/12/2003 | Kenji Yamagata | 00862.023377 | 8701 |
| 5514 | 7590 | 10/05/2005 | | |
| FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112 | | | | |
| | | | EXAMINER MACARTHUR, SYLVIA | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1763 | |

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/733,361

Applicant(s)

YAMAGATA ET AL.

Examiner

Sylvia R. MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 ¹⁷⁻³² is/are pending in the application.
- 4a) Of the above claim(s) 17-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>6/17/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Kume (US 6,880,563).

Kume teaches an apparatus and method of cleaning a substrate.

Re Claim 1: Kume teaches a process container 1, a holding mechanism 5, an oscillation source 3 which is arranged parallel to the surface of the holding mechanism, and a structure 6 to rotate the substrate held by a holding mechanism.

Re Claim 2: The rotary mechanism 6 transmits a rotating force to the substrate by a solid member, see Fig. 3.

Re Claim 3: To rotate the substrate the holding mechanism 5 is rotated, see Fig. 3

Re Claims 4 and 5: A flow of processing solution is formed to rotate the structure see col. 4 lines 55-65.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kume in view of Kiyobumi(JP 10-223585).

The teachings of Kume were discussed above.

Kume fails to teach a chamber as recited in claims 12 and 13 of the present invention.

Kiyobumi teaches a processing apparatus which processes a substrate by a process solution, comprising a process container 10 which stores the process solution, a holding mechanism (wafer rotating rods 11) which holds the substrate in the process container, 11 also anticipates the structure which is configured to rotate the substrate held by a holding mechanism, and an oscillation source Z(oscillation layer 30). Kiyobumi further teaches tank 10 (chamber exposes the process solution to form a low-pressure environment.

Regarding claim 13: Figures 1 and 2 illustrate that chamber 100 accommodates tank 10 and a low-pressure environment is formed around the process container.

The motivation to modify the apparatus of Kume to provide a chamber is to provide a housing to support the process container. One of ordinary skill at the time of the claimed invention would have found it obvious to provide a chamber as taught by Kiyobumi to provide a housing or suitable support means for the process container of Kume.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the apparatus of Kume with a chamber as taught by Kiyobumi.

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8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kume in view of Fumio et al (JP 10-242103).

The teachings of Kume were discussed above.

Kume fails to teach the structure having a supply portion.

Fumio et al teaches a processing apparatus which processes a substrate by a process solution, comprising a process container (tank 10) which stores the process solution, a holding mechanism 41 which holds the substrate in the process container;

An oscillation sources 31 which is perpendicular to the surface of the substrate 40.

Supply portion 21 supplies the process solution to the tank 10 and 31 (ultrasonic wave generator) is provided to rotate the substrate by the flow of the process solution.

Fumio et al teaches a processing apparatus which processes a substrate by a process solution, comprising a process container (tank 101) which stores the processing solution, a holding mechanism 105.

The motivation to combine the teachings of Kume and Fumio et al is that the supply portion being integral to the structures provides the desired control of the process fluid rheology and enhances the overall process result.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to combine the teachings of Kume and Fumio et al to provide the supply portion being integral to the structures provides the desired control of the process fluid rheology and enhances the overall process result.

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9. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kume in view of Kiyobumi or Fumio et al as applied above, in further view of Kiyobumi (JP 2000-133632).

The teachings of Kume, Kiyobumi and Fumio et al were discussed above.

All fail to teach removing bubbles.

Kiyobumi teaches desecration treatment during processing.

Regarding claims 7, 11, and 15: A circulation line 108 (discharge portion) is provided with a deaerator 110 in the middle of the line 108. The English Translation of the patent cites that the deaerator removes dissolved gas (in the form of bubbles)

Regarding 8: Figure 1 illustrates that the discharge portion is configured to discharge the process solution to local region in the surface of the substrate.

Regarding claims 9 and 10: Pump 109 is a discharge mechanism, which moves the discharge portion during the processing of the substrate.

The motivation to provide the discharge portion and deaerator of Kiyobumi in the apparatus of Kume and Kiyobumi or Fumio et al is to suppress the generation of bubbles in-situ.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the discharge portion with a deaerator.

Response to Arguments

5. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection. The apparatus of Kume teaches the oscillation source in parallel to the surface of the substrate as the amended claim 1 recites.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 9 a.m. and 3 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sylvia R MacArthur

Patent Examiner

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October 3, 2005



PARVIZ HASSANZADEH
SUPERVISORY PATENT EXAMINER